

THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Previously presented): An apparatus for cutting and removing living tissue comprising:

a rotational axle device;

at least one non-mechanical cutting device adapted to be radially displaced from said rotational axle device upon deployment; and

a first collapsible plate adapted to cover an area from said rotational axle device to said at least one non-mechanical cutting device,

wherein said rotational axle device comprises a guide device; a first elongated instrument having a proximal end and a distal end; a second elongated instrument adapted to advance over said first elongated instrument and having a proximal end and a distal end; and a second collapsible plate, and

wherein said non-mechanical cutting device is movably connected to said first elongated instrument or to said second elongated instrument,

wherein said first collapsible plate or said second collapsible plate is associated with said first elongated instrument or said second elongated instrument.

2. (Canceled)

3. (Previously presented): The apparatus of claim 1, wherein said guide device comprises a hemostatic object.

4. (Previously presented): The apparatus of claim 1, wherein said second collapsible plate is of a diameter sufficient to pass through a heart valve when in a collapsed position.

5. (Previously presented): The apparatus of claim 1, wherein said second collapsible plate is from about 2 mm to about 10 mm in diameter when said second collapsible plate is in a collapsed form.

6. (Previously presented): The apparatus of claim 1, wherein said second collapsible plate is from about 15 mm to about 25 mm in diameter when said second collapsible plate is in an expanded form.

7. (Previously presented): The apparatus of claim 1, wherein said second collapsible plate comprises a filter which permits blood flow, and prevents any loose tissue from flowing in a vascular system of a patient.

8. (Previously presented): The apparatus of claim 1, wherein said second collapsible plate is at said distal end of said first elongated instrument or said second elongated instrument.

9. (Previously presented): The apparatus of claim 1, wherein said second collapsible plate is conical in shape.

10. (Previously presented): The apparatus of claim 1, wherein said second collapsible plate is adapted to detect transmural penetration of an energy having a predetermined wavelength.

11. (Previously presented): The apparatus of claim 1, wherein said first collapsible plate is adapted to cover an area extending from an outer surface of said first elongated instrument to inner surface of said second elongated instrument, wherein said second elongated instrument has a diameter about equal to an inner diameter of a vessel at a location wherein said tissue is connected to said vessel.

12. (Previously presented): The apparatus of claim 1, wherein said first collapsible plate is adapted to cover an area extending from an outer surface of said first elongated instrument or

outer surface of said second elongated instrument to said non-mechanical cutting device.

13. (Previously presented): The apparatus of claim 1, wherein said first collapsible plate expands by advancement of an armature.

14. (Previously presented): The apparatus of claim 1, wherein said first collapsible plate and said second collapsible plate are magnetized.

15. (Original): The apparatus of claim 1, wherein said non-mechanical cutting device is a light-generating cutting device or a heat-generating cutting device.

16. (Original): The apparatus of claim 15, wherein said light-generating cutting device is a laser.

17. (Previously presented): The apparatus of claim 16, wherein said tissue having a periphery and said laser is adapted to generate a laser beam, wherein said laser beam is adapted, diffused or diffracted to form a shape substantially similar to periphery of said tissue.

18. (Previously presented): The apparatus of claim 15, wherein said heat generating cutting device is a cauterizing device.

19. (Canceled)

20. (Previously presented): The apparatus of claim 1, wherein said non-mechanical cutting device is movably connected to said first elongated instrument or said second elongated instrument by an armature.

21. (Previously presented): A method of cutting a heart valve using an apparatus for cutting and removing living tissue, said apparatus comprising:

a rotational axle device;

at least one non-mechanical cutting device radially displaced from said rotational axle device;

a first collapsible plate adapted to cover an area from said rotational axle device to said at least one non-mechanical cutting device,

wherein said rotational axle device comprises a guide device; a first elongated instrument having a proximal end and a distal end; a second elongated instrument adapted to advance over said first elongated instrument and having a proximal end and a distal end; and a second collapsible plate, wherein said method comprising:

inserting said guide device into a vascular system of a patient;

navigating said guide device to a pre-determined location;

advancing said first elongated instrument, adapted to include said first collapsible plate or said second collapsible plate, over said guide device and navigating said first elongated instrument to a predetermined location;

advancing said second elongated instrument, adapted to include said first collapsible plate or said second collapsible plate, over said first elongated instrument and navigating said second elongated instrument to a predetermined location; wherein a non-mechanical cutting device is part of said second elongated instrument or is separately advanced over said second elongated instrument to a predetermined location;

extending said first elongated instrument or said second elongated instrument having said second collapsible plate through said heart valve, wherein said distal end of said first elongated instrument or said second elongated instrument having said second collapsible plate is on one side of said heart valve and said distal end of said first elongated instrument or said second elongated instrument having said first collapsible plate is on opposing sides of said heart valve;

expanding said first collapsible plate;

expanding said second collapsible plate; and

cutting said heart valve by said non-mechanical cutting device.

22. (Original): The method of claim 21, wherein said non-mechanical cutting device is movably connected to said first elongated instrument or said second elongated instrument.

23. (Original): The method of claim 21, further comprising extracting said non-mechanical cutting device from said vascular system of said patient; and extracting said first collapsible plate and said second collapsible plate from said vascular system of said patient, including said heart valve located between said first and second collapsible plates.

24. (Original): The method of claim 21, wherein said first elongated instrument, said second elongated instrument, said first collapsible plate, said second collapsible plate, and said non-mechanical device are first arranged outside of said patient prior to said inserting.

25. (Original): A method for cutting a heart valve comprising:
positioning a first collapsible plate in an artery approximate to said heart valve;
positioning a second collapsible plate in a heart chamber approximate to said heart valve;
positioning at least one non-mechanical cutting device approximate to said heart valve;
cutting said heart valve;
removing said heart valve;
expanding a hemostatic object at distal end of a guide device; and
inserting a new heart valve.

26. (Original): The apparatus of claim 1, wherein said rotational axle device includes a heart ventricle protecting device to protect said heart ventricle from reflux of blood, from retrograde blood flow, or combinations thereof.

27. (Original): The apparatus of claim 26, wherein said heart ventricle protecting device is an inflatable balloon.

28. (Original): The apparatus of claim 26, wherein said heart ventricle protecting device includes a disc configuration.

29. (Original): The apparatus of claim 26, wherein said heart ventricle protecting device is a temporary valve.

30. (Previously presented): The method of claim 21, wherein said apparatus includes a heart ventricle protecting device and further comprising advancing said heart ventricle protecting device over said rotational axle device or said guide wire.

31. (Previously presented): The method of claim 21, wherein said apparatus includes a heart ventricle protecting device and further comprising advancing said heart ventricle protecting device to aorta proximal to a valve plate.

32. (Previously presented): The method of claim 21, wherein said apparatus includes a heart ventricle protecting device that is adapted to be inflated and further comprising inflating said heart ventricle protecting device after said cut heart valve is passed over said heart ventricle protecting device.

33. (Original): The method of claim 32, wherein said cut heart valve is at least partially excised prior to inflating said heart ventricle protecting device.

34. (Previously presented): The method of claim 21, wherein said apparatus includes a heart ventricle protecting device and wherein said heart ventricle protecting device is inflated and deflated by a trigger mechanism.

35. (Original): The method of claim 34, wherein said trigger mechanism is an electrocardiogram.